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# Solar Energy Technology in Development Cooperation

Frankfurt, Germany  
November 6<sup>th</sup>/7<sup>th</sup>, 2014



# Chairman's Message

**Dear ladies and gentleman, dear colleagues,**

According to leading climate experts an efficient and preventive climate protection strategy requires a 50% reduction of the anthropogenic greenhouse gas emissions worldwide. Taking this fact into account, and considering the very unequal access to energy services in industrial and developing countries, the dramatic situation becomes even more apparent – more than 2 billion people in developing countries do not have access to modern energy supplies therefore in the decades to come energy consumption in these countries will increase considerably. So to significantly decrease the anthropogenic greenhouse gas emissions will only be possible by relying on energy systems based on renewable energy sources.

The initiative “Sustainable Energy for All” (SE4All) released by UN General Secretary Ban Ki-Moon, was the stimulus for an international dialogue on energy in developing countries. SE4All places great emphasis on providing access to affordable, secure, and reliable healthy energy services and energy sources, that is renewable energy sources for people in developing countries.

The need to create energy economies and energy infrastructures in developing countries, the decentralized energy demand in rural areas, and the large solar resource in most of these countries are perfect conditions for implementing new technologies that utilize renewable energy sources. Moreover, the increased use of locally available resources can contribute to many countries' debt-relief efforts as the importation of energy is one of the contributing factors to high level of debts in developing countries.

Solar thermal systems, photovoltaics, solar drying and solar cooking can help to build a sustainable energy system in developing countries, and with the appropriate implementation provide local jobs.

During the two-day conference participants will learn about, discuss and share knowledge and experiences on realized projects, project financing instruments, and social, political and economic barriers for implementing solar technologies. The conference offers a forum for know-how transfer and exchange of experiences between international solar experts and people working in the field of development cooperation and development policies.

The conference advisory board and the OTTI organizing team are pleased to welcome you to the conference “Solar Energy Technology in Development Cooperation”

**Werner Weiss**

AEE – Institute for Sustainable Technologies  
Gleisdorf, Austria

# Conference Chairman

## Werner Weiss

AEE – Institute for Sustainable Technologies  
Gleisdorf, Austria

# Scientific Committee

## Dr.-Ing. Elimar Frank

University of Applied Sciences HSR, Rapperswil, Switzerland

## Dr. Bernd Hafner

Sonnenenergie für Westafrika e.V., Germany

## Dr. Albrecht Kaupp

Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ),  
Berlin, Germany

## Dr.-Ing. Joachim Koschikowski

Fraunhofer Institute for Solar Energy Systems (ISE), Freiburg,  
Germany

## Dr. Stefan Nowak

NET Nowak Energy Technology Ltd., St. Ursen, Switzerland

## Prof. Matthias Rommel

Institute for Solar Technology SPF, Rapperswil, Switzerland

## Dipl. Pol. Joscha Rosenbusch

BSW-Solar (i.A. BMZ), Berlin, Germany

## Prof. Dr. Klemens Schwarzer

Solar Global e.V. /Solar Institut Jülich der Fh Aachen, Germany

# You will meet

in the topics of the conference:

A colorful and fascinating group of people from all continents

- manufactureres , suppliers and installers of solar energy technologies
- energy consultants, politicians and solar energy technologies programme planners
- financiers from banks and foundations
- scientists, engineers and students

## Workshop

**mainhaus Stadthotel Frankfurt**

**Friday, November 7<sup>th</sup>, 2014,**

**9.00 – 15.00 hrs**

### Individual counseling for develoPPP.de project ideas

Through the develoPPP.de programme, the German Federal Ministry for Economic Cooperation and Development (BMZ) fosters the involvement of the private sector in development cooperation at the point where business opportunities and development policy initiatives intersect. develoPPP.de helps businesses to minimise the risk of their international involvement. It provides companies investing in developing and emerging countries with financial and, if required, also professional support. The company is responsible for covering at least half of the overall costs; BMZ contributes up to a maximum of EUR 200,000. These development partnerships with the private sector may last up to three years. BMZ has appointed three public partners to implement the programme on its behalf: DEG – Deutsche Investitions- und Entwicklungsgesellschaft mbH, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and sequa gGmbH. Further information are available at [www.developppp.de](http://www.developppp.de)

The develoPPP.de - Workshop allows solar companies to discuss initial project ideas with project manager from the develoPPP.de implementing organizations.

- Would the project idea be eligible for develoPPP.de support?
- How do requirements and processes for participation, costs, risks and funding look like?
- Which are best practices in existing develoPPP.de projects in the solar sector?

Please announce your interest in a individual mail to [Gabriele.struthoff-mueller@otti.de](mailto:Gabriele.struthoff-mueller@otti.de) .

You will be asked to prepare a short outline of the project idea.

## Programme

### International Conference on **SOLAR ENERGY TECHNOLOGY IN DEVELOPMENT COOPERATION** **Thursday, November 6<sup>th</sup>, 2014**

#### 09.30 **Opening Address**

Gabriele Struthoff-Müller, OTTI, Regensburg, Germany  
Werner Weiss, AEE- Institute for Sustainable Technologies,  
Gleisdorf, Austria

## OPENING SESSION

**Chair:** **Werner Weiss, AEE- Institute for Sustainable Technologies, Gleisdorf, Austria**

- 09.50 **Global status and outlook of Renewable Energy**  
Rana Adib, REN21, Paris, France
- 10.15 **Approaches to support solar energy use**  
n.n. BMZ, Bonn, Germany (tbc)
- 10.30 **Title will follow**  
n.n., ISÖ, Frankfurt, Germany (tbc)
- 10.45 **Discussion**
- 11.00 **Coffee break and visit to the trade exhibition**

## NEEDS AND MARKET DEVELOPMENT FOR SOLAR ENERGY

**Chair:** **Klemens Schwarzer, Solar Global e.V. /Solar Institut Jülich der FH Aachen, Germany**

- 11.45 **Commercialization of solar energy in urban and industrial areas (ComSolar) of India**  
Timon Herzog, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, New Delhi, India
- 12.00 **Establishing a solar thermal flagship district in Gauteng, South Africa**  
Dieter Holm, SOLTRAIN/SESSA, Hartbeespoort, South Africa
- 12.15 **The emergence of the local solar industry in Morocco**  
Benoît Payard, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Accompagnement du Plan Solaire Marocain, Rabat, Morocco
- 12.30 **Role of an association and training in the development of a solar thermal market in Thailand**  
Christoph Menke, University of Applied Science Trier, Germany, Joint Graduate School of Energy and Environment, Bangkok, Thailand
- 12.45 **Discussion**
- 13.05 **Presentation of Sponsors**
- 13.15 **Lunch and visit to the trade exhibition**

## FINANCING FOR SOLAR ENERGY IN DEVELOPING COUNTRIES

**Chair:** **Joscha Rosenbusch, BSW-Solar (i.A. BMZ), Berlin, Germany**

- 14.30 **Financing for solar energy in developing countries**  
Silvia Kreibiehl, Frankfurt School of Finance, Frankfurt, Germany
- 14.45 **Challenges and strategies for developers of large solar energy projects in developing countries**  
Boris Westphal, Suntrace GmbH, Hamburg, Germany

- 15.00 **develoPPP.de - Development partnerships with the private sector – solar energy**  
**Financial support for companies investing in developing and emerging countries by the German Federal Ministry for Economic Cooperation and Development (BMZ)**  
Annika Powitz, GIZ, Eschborn, Germany
- 15.15 **Discussion**
- 15.30 **Poster Session**  
**Chair: Matthias Rommel, Institute for Solar Technology SPF, Rapperswil, Switzerland**
- A1 **Simulation of thermosyphon systems for solar domestic hot water preparation**  
Sebastian Brandmayr, Technische Hochschule Ingolstadt, Germany
- A2 **Proposal of a cluster on solar thermal systems in Mozambique**  
Geraldo Nhumaio, Universidade Eduardo Mondlane, Maputo, Mozambique
- A3 **Efficiency and economic comparison between two CPVT systems in Cairo**  
Tarek Khalil, German University in Cairo, New Cairo City, Egypt
- A4 **Simulation of a solar assisted air conditioning system for a building in the German University of Cairo**  
Tarek Khalil, German University in Cairo, New Cairo City, Egypt
- A5 **Energy supply model for agricultural irrigation and electrical supply**  
Konate Salia, University of Applied Sciences Technikum Wien, Mödling, Austria
- A6 **The BiogaST project - biogas support for Tanzania**  
Jana Möllenkamp, Institut für Solartechnik SPF, Rapperswil, Switzerland
- B1 **From 'solar energy Zimbabwe' to SOLTRAIN**  
Anton Schwarzmüller, Domestic Solar Heating P/L, Harare, Zimbabwe
- B2 **Monitoring results of installed solar thermal systems in the Southern African Region**  
Rudolf Moschik, AEE-INTEC, Gleisdorf, Austria
- B3 **Potential of distributed grid-connected solar photovoltaic systems in rural electrification in Africa: Case study of Walewale, Ghana**  
Emmanuel Narteh Narh, AU Grid-Solar Project The Energy Center, Kumasi, Ghana
- C1 **Effectiveness of last mile entrepreneurs (LMEs) in sustainable supply of clean energy technologies in rural areas "A case of energising development Kenya Country Programme (EnDev-Kenya)"**  
Walter Kipruto, GIZ, Nairobi, Kenya
- C2 **Barriers for successful implementation of solar-energy based development cooperation in developing countries**  
Chian-Woei Shyu, National Chung-Cheng University, Min-Hsiung, Chia-Yi, Taiwan
- C3 **Brand Africa and sustainable energy consumption**  
Penelope Muzanenhamo, Warwick Business School University of Warwick, Coventry, United Kingdom

- C4 **Social, political and economic barriers for a successful solar project implementation in Rwanda**  
Francois Nezerwa, DASSY Enterprise Ltd, Kigali, Rwanda
- C5 **The ISES Webinar Program: Online training and information to overcome knowledge barriers for implementing solar energy technology in developing countries**  
Elimar Frank, ISES, Freiburg, Germany
- 16.00 **Coffee break and visit to the trade and poster exhibition**

## **PHOTOVOLTAICS IN DEVELOPMENT COOPERATION – MOVING FROM OFF-GRID RURAL APPLICATIONS TO LARGE SCALE DEPLOYMENT**

**Chair: Stefan Nowak, NET Nowak Energy Technology Ltd., St. Ursen, Switzerland**

- 16.45 **Technical overview on sustainable PV off-grid rural electrification technologies**  
Michael Müller, Steca Elektronik GmbH, Memmingen, Germany
- 17.00 **Photovoltaic milk cooling as business opportunity in the tropics**  
Victor Torres Toledo, Universität Hohenheim, Stuttgart, Germany
- 17.15 **The first grid-connected PV solar farm in Lesotho**  
Moeketsi Mpholo, National University of Lesotho, Roma, Lesotho
- 17.30 **Mini-hydro and PV village power systems transferred to Afghan national utility DABS for sustainable operation and maintenance**  
Winfried Klinghammer, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Faizabad, Afghanistan
- 17.45 **Solar beats Diesel – Best practice example solar smart grid Tabarre, Haiti**  
Willi Ernst, BIOHAUS-Stiftung für Umwelt und Gerechtigkeit, Paderborn, Germany
- 18.00 **Discussion**
- 18.25 **End of the first conference day**
- 18.45 **Reception**

## **Friday, November 7<sup>th</sup>, 2014**

### **SOLAR THERMAL: DRYING, AIR HEATING, PROCESS HEAT**

**Chair: Elimar Frank, University of Applied Sciences HSR, Rapperswil, Switzerland**

- 08.30 **Overview on solar thermal technology**  
Bernd Hafner, Sonnenenergie für Westafrika e.V., Germany
- 08.50 **Innovative inflatable solar dryer for tropical countries**  
Ana Salvatierra Rojas, Universität Hohenheim, Stuttgart, Germany
- 09.05 **Green and sustainable solar thermal project: a successful case study of industrial scale solar dryer in PPP model of Nepal**  
Ram Prasad Dhital, Institute of Engineering, Tribhuvan University, Nepal

- 09.20 **Solar thermal solutions for increasing energy demands in a sub-zero temperature climate in Ladakh, India**  
Joachim Götttsche, FH Aachen Solar-Institut Jülich, Jülich, Germany
- 09.35 **First solar process steam system in Jordan**  
Martin Haagen, Industrial Solar GmbH, Freiburg, Germany
- 09.50 **Discussion**
- 10.15 **Coffee break and visit to the trade and poster exhibition**

## SOLAR THERMAL: HEATING AND COOLING, DOMESTIC HOT WATER

**Chair: Bernd Hafner, Sonnenenergie für Westafrika e.V., Germany**

- 11.00 **Solar heating and cooling in developing countries: Experiences and potentials**  
Nicole Olsacher, S.O.L.I.D., Graz, Austria
- 11.15 **Solar water heating experiences and vision for Namibia**  
Zivayi Chiguvare, Polytechnic of Namibia, Windhoek, Namibia
- 11.30 **The SOLambara project – beneficial replacement of electrical water heaters with solar thermal systems at university dorms in the Usambara Mountains, Tanzania**  
Elimar Frank, Institute for Solar Technology SPF, University of Applied Sciences HSR, Rapperswil, Switzerland
- 11.45 **Solar energy mobile training units (S.O.E.M.T.U.) and National Energy Policy of Zimbabwe**  
Anton Schwarzmüller, Domestic Solar Heating P/L, Harare, Zimbabwe
- 12.00 **Discussion**
- 12.20 **Lunch and Visit to the Poster and Trade Exhibition**

## SOLAR ENERGY FOR DECENTRALISED WATER TREATMENT SYSTEMS

**Chair: Joachim Koschikowski, Fraunhofer Institute for Solar Energy Systems (ISE), Freiburg, Germany**

- 13.45 **Photovoltaic driven reverse osmosis – Chance for sustainable water production in development cooperation?**  
Joachim Went, Fraunhofer-Institut für Solare Energiesysteme ISE, Freiburg im Breisgau, Germany
- 14.00 **Solar-driven water treatment – practical experiences and lessons learned of realized projects in India**  
Wieghaus Marcel, SolarSpring GmbH, Freiburg, Germany
- 14.15 **Water disinfection for remote areas of developing regions – An innovative and sustainable approach using solar technology and anodic oxidation**  
Philipp Otter, AUTARCON GmbH, Kassel, Germany
- 14.30 **Discussion**
- 14.45 **Coffee Break**



## CAPACITY BUILDING

**Chair: Albrecht Kaupp, Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ), Berlin, Germany**

- 15.15 **Enabling PV in the MENA Region - Focus on Tunisia and Jordan**  
Anita Richter, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Berlin, Germany
- 15.30 **NEED: Network of excellence in renewable energy technologies for development**  
Wilfried Zörner, Technische Hochschule Ingolstadt, Ingolstadt, Germany
- 15.45 **Business opportunities with solar systems - From the solar mill to the solar market place**  
Tobias Zwirner, Phaesun GmbH, Memmingen, Germany
- 16.00 **20 Years of solar energy utilization, research and education in Lesotho 1994 - 2014**  
Ivan Yaholnitsky, Bethel Business and Community Development Centre, Mt. Moorosi, Lesotho
- 16.15 **Discussion**
- 16.35 **Closing Remarks**  
Werner Weiss, AEE – Institute for Sustainable Technologies, Gleisdorf, Austria
- 16.45 **End of the conference**

## Organisation

### Organisation Committee

Bernd Porzelius  
Gabriele Struthoff-Müller  
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93049 Regensburg, Germany  
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### Conference Venue

**mainhaus Stadthotel Frankfurt**  
Lange Str. 26  
60311 Frankfurt am Main  
Germany  
Phone: +49 69 299 06 0  
www.mainhaus-frankfurt.de

### Online-Registration

Only online registration available.  
To register for the conference  
please visit: <https://www.otti.de/registration/SEE-4637>

### Conference Fee

If registered until September 30<sup>th</sup>, 2014 | after September 30<sup>th</sup>, 2014

Per Person: € 570,- | 670,-

Member of OTTI and  
supporting organizations:  
Per Person: € 470,- | 540,-

From third participant on,  
every other participant of your  
company profits from our **15% discount** on the conference fee.  
Fees cover admission to all  
sessions, invitation to all coffee  
breaks, light lunches, Get  
together, and the conference  
proceedings.

### Accommodation

Please book your accommodation as soon as possible by yourself.

[info@mainhaus-frankfurt.de](mailto:info@mainhaus-frankfurt.de)

# Conference Location



© Tourismus + Congress GmbH Frankfurt am Main

**Frankfurt** is the most international city in Germany, the largest financial centre on the continent, the historical city of coronations and the city of Johann Wolfgang Goethe.

**mainhaus Stadthotel Frankfurt**  
**Lange Str. 26**  
**60311 Frankfurt am Main**  
**Germany**

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**[www.mainhaus-frankfurt.de](http://www.mainhaus-frankfurt.de)**

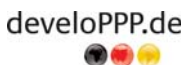
Direct train connection from the Airport to the Hotel (S-Bahn 8 and 9, Ostendstraße)

**Please book your accomodation as soon as possible by yourself.**

## Conditions of participation and cancellation

You will receive your registration documents with receipt of your registration. The participation fee is VAT-exempt and due net with receipt of the invoice. Please transfer the invoice amount not later than 14 days before the conference starts. Otherwise a copy of the transfer order must be presented at the conference desk. All bank charges have to be covered by the transmitter. Entrance to the conference can only be permitted if OTTI has received the payment. OTTI reserves the right to make modification and amendments of any kind for urgent reasons. In the case of a cancellation of your registration up to 30 days before the seminar takes place, we do not raise a cancellation fee. For cancellations made within a period of 30 to 15 days before the start of the seminar, we charge a service fee of € 120. In the event of cancellations made later than 15 days before the seminar, or in the case of absenteeism, the total participation fee will be charged, unless you are able to provide evidence of a deviating amount of damages or expenses. The cancellation must be in written form. The person representing the contracting party may be replaced at any time but a written notice is necessary not later than 4 days before the conference starts. Irrespective of legal basis, OTTI shall only be liable for property damage and pecuniary loss which occurred due to intent or gross negligence. The place of fulfilment and jurisdiction is Regensburg, Germany.

# Supporting Organisations



## International Conference on Solar Energy Technology in Development Cooperation

	November 6 <sup>th</sup> , 2014	November 7 <sup>th</sup> , 2014
08:30		
09:00		
09:30	Opening address	Solar thermal: Drying, air heating, process heat
10:00	Opening session	
10:30		
11:00		
11:30		Solar thermal: Heating and cooling, domestic hot water
12:00	Needs and market development for solar energy	
12:30		
13:00		
13:30		
14:00		Solar energy for decentralised water treatment systems
14:30	Financing for solar energy in developing countries	
15:00		
15:30	Poster Session	Capacity Building
16:00		
16:30		Closing remarks
17:00	Photovoltaics in development cooperation – moving from off-grid rural applications to large scale deployment	
17:30		
18:00		
18:30		
19:00		
19:30	Reception	
20:00		